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PART II:

ENVIRONMENTAL PROTECTION AGENCY

■

AMBIENT AIR QUALITY

Reference and Equivalent Methods

Title 40—Protection of the Environment

CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY

[FRL 495–1]

AMBIENT AIR MONITORING REFERENCE AND EQUIVALENT METHODS

Miscellaneous Amendments

On February 18, 1975, EPA proposed amendments to Parts 50, 51, and 53 of Title 40, Code of Federal Regulations (40 FR 7064). These amendments were intended to add flexibility to Part 53 and related sections of Parts 50 and 51, and were largely inspired by public comments on Part 53 as originally proposed on October 12, 1973 (38 FR 28438). Interested persons were afforded an opportunity to participate in the rulemaking by submitting written comments. After considering the comments received, the amendments have been revised and are being promulgated today.

Only a few relatively minor changes have been made to the amendments as originally proposed. A general discussion of the amendments appeared in the preamble associated with the amendments when they were proposed. Therefore, only the major amendments and the changed amendment are discussed briefly below.

Supersession of reference methods. EPA intends to encourage and take advantage of advances in the art of monitoring pollutants in ambient air. Accordingly, Part 53 is being amended by adding a new § 53.16, set forth below, establishing procedures and criteria applicable to requests that the Administrator specify a new manual reference method, or a new measurement principle and calibration procedure for automated reference methods, by revising the appropriate appendix to 40 CFR Part 50. A corresponding amendment to § 53.7 makes clear that the Administrator may take such action in the absence of a request under § 53.16. For purposes of 40 CFR 51.17(a), supersession of a reference method under § 53.16 will ordinarily require replacement of existing air monitoring methods within a reasonable period as discussed more fully below.

(1) *Criteria for supersession.* The Administrator will ordinarily take action under § 53.16 only if he determines that a candidate method (or some variation thereof) is substantially superior to the existing reference method(s). In exercising his discretion, the Administrator will consider not only the benefits that would result from such action but also the potential economic consequences for State and local air pollution control agencies and any disruption of the State and local air quality monitoring programs that might result from the necessity of replacing existing air monitoring equipment within a reasonable period (see § 53.16(b)). As a result, it is expected that supersession of reference methods will occur relatively infrequently, and only when the advantages of such action clearly outweigh potential disadvantages.

(2) *Procedures.* Because action under § 53.16 will involve amendment of Part 50 and will affect both manufacturers and users of air monitoring methods, as well as the public interest in effective air pollution control programs, EPA believes such action should be governed by the requirements for informal ("notice-and-comment") rulemaking specified in § 4 of the Administrative Procedure Act, 5 U.S.C. § 553. Accordingly, § 53.16 provides that informal rulemaking procedures will be followed once the Administrator reaches a tentative conclusion that revision of an appendix to Part 50 is appropriate under § 53.16. As discussed more fully below, § 53.16 also establishes procedures by which an applicant may seek to invoke the informal rulemaking process. In effect, these procedures implement 5 U.S.C. 553(e), which requires in general terms that agencies afford interested persons the right to petition for the issuance, amendment, or repeal of a rule.

A person requesting action under § 53.16 must submit an application similar to that required by § 53.4 for a reference or equivalent method determination. Within 75 days, the Administrator will make a "preliminary finding" on the application or notify the applicant that further information or tests are needed before a preliminary finding can be made. If the preliminary finding is negative (in which case the Administrator will determine whether the applicant's candidate method can be designated as a reference or equivalent method), the applicant may appeal the finding by various means. If the preliminary finding is affirmative (or if a negative preliminary finding is reversed after an appeal), the Administrator will publish a notice of proposed rulemaking in the FEDERAL REGISTER, indicating that he proposes (a) to revise the appropriate appendix to Part 50 and (b) to take appropriate action to cancel existing reference or equivalent method designations. The notice will indicate what period(s) of time the Administrator will allow for replacement of existing methods (discussed below) and will solicit public comments on the proposal. If, after consideration of comments received, the Administrator determines that the appendix in question should be revised, he will take appropriate action by publication in the FEDERAL REGISTER.

(3) *Replacement of existing methods.* 40 CFR 51.17(a), as amended on February 18, 1975 (40 FR 7042), requires that State implementation plans adopted pursuant to § 110 of the Clean Air Act (42 U.S.C. 1857c–5) provide for the establishment of air quality surveillance systems. Each such system must comply with certain requirements, one of which is that each method used by a State to monitor the ambient air for certain pollutants must ordinarily be either the appropriate reference method or an equivalent method (see 40 CFR 51.17a, promulgated on February 18, 1975 (40 FR 7043)). In the event that an appendix to 40 CFR Part 50 is revised (and existing reference or equivalent method designations are cancelled) under the new § 53.16, 40 CFR 51.17a would ordinarily require State and local control agencies to replace existing monitoring methods with new reference or equivalent methods based on the revised appendix. To minimize the costs and disruption that might result, § 51.17(a) is being amended to provide a reasonable period, to be determined by the Administrator, for the replacement by existing equipment in such cases. As indicated above, the period(s) the Administrator will allow would be included in the notice of proposed rulemaking that would precede revision of the appendix in question, and the period(s) could be revised, if appropriate, after consideration of comments received in response to the notice.

Use of nonconforming analyzers in certain cases. Some comments on Part 53 as originally proposed suggested that use of existing analyzers be permitted for the remainder of their useful lives under 40 CFR 51.17(a) where the analyzer partially or substantially meets the requirements of Part 53. In response, EPA proposed and is now promulgating three exceptions to the general rule requiring use of reference or equivalent methods for purposes of 40 CFR 51.17(a): an interference exception (§ 51.17a(b)), and two range exceptions (§§ 51.1a (c) and (d)). The nature and purposes of these exceptions were described in the notice of proposed rulemaking published on February 18, 1975 (40 CFR 7064). It should be noted that agencies applying for any of the exceptions may rely on data or other information known to EPA from its own testing and from other sources as provided in § 51.17a(e)(3). In most cases, this should substantially reduce the burden of applying for the exceptions.

Modification of methods by users. Section § 53.14 (as promulgated on February 18, 1975 (40 FR 7044) establishes certain requirements applicable to modification of reference or equivalent methods by their vendors. To assure the reliability and national comparibility of air quality data obtained under 40 CFR 51.17(a), however, EPA believes some provision is necessary for approval of approval of user modifications as well.

Accordingly, 40 CFR 51.17a (as promulgated on February 18, 1975 (40 FR 7042)) is being amended by adding a new paragraph (f) set forth below, that requires prior approval of user modifications. As with 40 CFR 53.14, the new paragraph (f) attempts to minimize any burdens and delays resulting from the requirement of prior approval by encouraging brevity in requests for approval and by asking the user to state the probable effect of the modification. In many cases, probably little information will be necessary to demonstrate that the modification will have no significant adverse effect on the performance characteristics of the method, and in such cases the time necessary for EPA review should be short. In addition, requests for approval are necessary only for modifications that would or might "significantly"

alter the performance characteristics of the method; accordingly, requests for approval are unnecessary for most minor or trivial modifications of methods. Finally, as discussed more fully below, provision has been made to permit temporary modifications without prior approval in certain cases.

Conditions of designation. 40 CFR 53.9 is being amended by adding several further conditions applicable to designations of reference or equivalent methods. As with the conditions already specified in § 53.9, failure to comply with any of the additional conditions will constitute grounds for cancellation of such designations.

The additional conditions may be summarized as follows:

(1) Any analyzer offered for sale as a reference or equivalent method must bear a label or sticker indicating that it has been designated as a reference or equivalent method in accordance with Part 53.

(2) If such an analyzer has one or more selectable ranges, the label or sticker must be placed in close proximity to the range selector and must indicate which range or ranges have been designated as reference or equivalent methods.

(3) An applicant who offers analyzers for sale as reference or equivalent methods must maintain a list of ultimate purchasers of such analyzers and must notify them within 30 days if a reference or equivalent method designation applicable to the analyzers has been cancelled or if adjustment of the analyzers is necessary under 40 CFR 53.11(b) to avoid a cancellation.

(4) An applicant who modifies an analyzer previously designated as a reference or equivalent method may not sell the analyzer (as modifiedf) as a reference or equivalent method (although he may choose to sell it without such representations), nor attach a label or sticker to the analyzer (as modified) under the provisions described above, until he has received notice under 40 CFR 53.14(c) that the original designation or a new designation will apply to the method as modified or until he has applied for and received notice of a new reference or equivalent method determination for the analyzer as modified.

Comments received on proposed amendments and changes made in final amendments. EPA received comments on the proposed amendments from 5 respondents. Three of the respondents had no specific comments on the proposed amendments but did have comments on 40 CFR Part 53 in general. The latter comments had no bearing on the amendments set forth below, but will be kept on file pending proposal of any further amendments to Part 53.

Two of the respondents approved or supported the amendment to add a provision for supersession of reference methods, but reiterated and emphasized the need to consider such supersessions very seriously, carefully weighing such factors as (1) the substantial investment by State and local control agencies (as well as some industries) in air monitoring equipment which might have to be replaced; (2) the degree of method accuracy or performance required for showing compliance with the pertinent ambient air quality standard; (3) the relationship between a candidate method and the pertinent ambient air quality standard, assuming the latter was based on data collected by the existing reference method; and (4) the availability of funds from EPA to help agencies replace existing analyzers with designated methods. Upon review of the comments received, EPA has decided that the language of the proposed amendment was adequate and that no changes are required to accommodate these comments.

One comment suggested that indefinite use of existing instruments which have a proven consistent relationship with reference methods be permitted for purposes of § 51.17(a) to save the cost of replacing them. The proof of consistency would be correlation of parallel ambient air measurements made with the analyzer in question and with the existing reference method. For reasons discussed in the preamble to previous amendments to 40 CFR Parts 50 and 51 (40 FR 7042, February 18, 1975), EPA has concluded that methods used for purposes of § 51.17(a) must be reference or equivalent methods unless one of the exceptions described in § 51.17a applies. These exceptions provide for use of existing analyzers up to February 18, 1980, and, as revised today, would permit use of such analyzers for the remainder of their useful lives under certain conditions. Also, as noted in the preamble mentioned above, EPA intends to test some existing analyzers, to the extent that its resources permit, and, if they meet the requirements of Part 53, to designate them as reference or equivalent methods.

Another comment supported the amendment concerning modifications of methods by users, but suggested that the 10-day requirement for reporting of temporary modifications to EPA was too burdensome. The comment further suggested that if the method is properly repaired within 60 days, the quarterly data submitted to EPA could be qualified to indicate the temporary modification. After considering this comment, EPA has revised the amendment on user modifications to eliminate the 10-day time limit for reporting of temporary modifications, and to require that such reports be submitted to EPA along with the quarterly data (see § 51.17a(f)(5)). Thus the report of the temporary modification and the data taken with the temporarily modified method will be sent to EPA together to facilitate more expedient evaluation of the data.

It should be noted that the address for submission of requests for approval and other information concerning user modifications or use of nonconforming methods (40 CFR 51.17a(e)) has been changed to reflect a reorganization within the Agency. Pending amendment of 40 CFR 53.4(a) to reflect this change of address, applications for reference or equivalent method determinations should also be submitted to the new address.

Effective date. These amendments become effective on April 16, 1976.

Dated: March 3, 1976.

RUSSELL E. TRAIN,
Administrator.

Chapter I, Title 40, Code of Federal Regulations, is amended as follows:

PART 50—NATIONAL PRIMARY AND SECONDARY AMBIENT AIR QUALITY STANDARDS

1. Section 50.1 is amended by revising paragraphs (f) and (g) to read as follows:

§ 50.1 Definitions.

* * * * *

(f) "Reference method" means a method of sampling and analyzing the ambient air for an air pollutant that is specified as a reference method in an appendix to this part, or a method that has been designated as a reference method in accordance with Part 53 of this chapter; it does not include a method for which a reference method designation has been cancelled in accordance with § 53.11 or § 53.16 of this chapter.

(g) "Equivalent method" means a method of sampling and analyzing the ambient air for an air pollutant that has been designated as an equivalent method in accordance with Part 53 of this chapter; it does not include a method for which an equivalent method designation has been cancelled in accordance with § 53.11 or § 53.16 of this chapter.

(Sec. 4(a), Pub. L. 91-604, 84 Stat. 1679 (42 U.S.C. 1857c-4))

PART 51—REQUIREMENTS FOR PREPARATION, ADOPTION, AND SUBMITTAL OF IMPLEMENTATION PLANS

2. Section 51.17a is amended by adding new paragraphs (a)(4), (a)(5), (b), (c), (d), (e), and (f) to read as follows:

§ 51.17a Air quality monitoring methods.

(a) *General requirements.* * * *

(4) Any manual or automated method purchased prior to cancellation of a reference or equivalent method designation applicable to that method under § 53.11 or § 53.16 of this chapter may be used for purposes of § 51.17(a) for a reasonable period of time to be determined by the Administrator.

(5) An analyzer may be used for its useful life for purposes of § 51.17(a) if such use is approved by the Administrator under paragraph (b), (c), or (d) of this section, or any combination thereof, unless the approval is withdrawn under paragraph (e)(5) of this section.

(b) *Use of nonconforming analyzers in certain geographical areas.* (1) The Administrator may approve use in a particular geographical area of an analyzer that is not a reference or equivalent

method for purposes of § 51.17(a) if the analyzer was purchased prior to February 18, 1975, and the Administrator determines:

(i) That the analyzer (or the method of which the analyzer is representative) meets all the requirements of Part 53 of this chapter that would apply if an application for a reference or equivalent method determination were submitted for the method of which the analyzer is representative except (A) the test for interference equivalent specified in § 53.23(d) of Part 53 and (B) the requirements of Subpart C of Part 53, if applicable, to the extent that failure to meet the Subpart C requirements results from sensitivity to interferants; and

(ii) That interferants that cause or would cause the analyzer to fail the requirements of § 53.23(d) and Subpart C of Part 53 do not occur in significant concentrations in the geographical area in which use of the analyzer is proposed. For purposes of this paragraph (b), a "significant concentration" means one that would cause a measurement error equal to or greater than the lower detectable limit specification in Table B–1 in Subpart B of Part 53.

(2) Requests for approval under this paragraph (b) shall be submitted as provided in paragraph (e) of this section.

(3) Except as provided in paragraph (e)(3) of this section, each request submitted under this paragraph (b) shall contain the information specified in paragraph (e)(2) of this section and the following information:

(i) The date on which the analyzer was purchased;

(ii) An identification and description of the geographical area in which use of the analyzer is proposed;

(iii) Such data or other information as may be necessary to demonstrate that the interferants referred to in paragraph (b)(1)(ii) of this section do not occur in significant concentrations in the geographical area in which use of the analyzer is proposed; and

(iv) If Subpart C of Part 53 of this chapter would apply if an application for a reference or equivalent method determination were submitted for the method of which the analyzer is representative, test data for tests conducted with the analyzer in accordance with Subpart C in the geographical area in which use of the analyzer is proposed.

(4) Any person who has obtained approval of a request under this paragraph (b) shall:

(i) Assure that the analyzer for which approval was obtained is used for purposes of § 51.17(a) only in the geographical area identified in the request;

(ii) Report to the Administrator within 60 days any significant increase in concentrations of the interferants referred to in paragraph (b)(1)(ii) of this section in the geographical area identified in the request and concurrently submit such new or additional information as may be necessary to supplement the demonstration required by paragraph (b)(3)(iii) of this section; and

(iii) On a semi-annual basis submit reports containing such data or other information as may be necessary to demonstrate that the interferants referred to in paragraph (b)(1)(ii) of this section continue to occur in insignificant concentrations in the geographical area identified in the request. Reports required by this paragraph (b)(4) of this section shall be submitted to the address specified in paragraph (e)(1) of this section.

(c) *Use of methods with nonconforming ranges.*

(1) The Administrator may approve use of an analyzer that is not a reference or equivalent method for purposes of § 51.17(a) if: (i) The analyzer was purchased prior to February 18, 1975;

(ii) The Administrator determines that the analyzer (or the method of which the analyzer is representative) meets all requirements of Part 53 of this chapter that would apply if an application for a reference or equivalent method determination were submitted for the method of which the analyzer is representative except the range requirement specified in Table B–1 in Subpart B of Part 53; and

(iii) The range of the analyzer does not extend to concentrations more than two times the upper range limit specified in such Table B–1, or, if the analyzer has more than one selectable range, the analyzer will not be used for purposes of § 51.17(a) while operated in any range extending to such concentrations.

NOTE: If the use of the analyzer is approved under paragraph (d) of this section, the limitations specified in this paragraph (c)(1)(iii) of this section will not apply unless the approval under paragraph (d) is later withdrawn.

(2) Requests for approval under this paragraph (c) shall be submitted as provided in paragraph (e) of this section.

(3) Except as provided in paragraph (e)(3) of this section, each request submitted under this paragraph (c) shall contain the information specified in paragraph (e)(2) of this section and the following information:

(i) The date on which the analyzer was purchased; and

(ii) A statement that the range of the analyzer does not extend to concentrations more than two times the upper range limit specified in Table B–1 in Subpart B of Part 53 of this chapter, or, if the analyzer has more than one selectable range, that the analyzer will not be used for purposes of § 51.17(a) while operated in any range extending to such concentrations.

NOTE: If use of the analyzer is approved under paragraph (d) of this section, the statements required by this paragraph (c)(3)(ii) will be considered inapplicable unless the approval under paragraph (d) is later withdrawn.

(4) Any person who has obtained approval of a request under this paragraph (c) shall, if the analyzer has more than one selectable range, assure that the analyzer is not used for purposes of § 51.17(a) while operated in any range extending to concentrations more than two times the upper range limit specified in such Table B–1.

(d) *Use of methods with nonconforming ranges in certain geographical areas.*

(1) The Administrator may approve use in a particular geographical area of an analyzer having a broader range (*i.e.*, one extending to higher concentrations) than that permitted by paragraph (c) of this section for purposes of § 51.17(a), regardless of the date on which the analyzer was purchased, if:

(i) The analyzer has more than one selectable range, and one of the ranges either (A) is the range specified in Table B–1 in Subpart B of Part 53 of this chapter, or (B) is approved for use under paragraph (c) of this section (which applies only to analyzers purchased before February 18, 1975),

(ii) The Administrator determines that the analyzer (or the method of which the analyzer is representative) meets all the requirements of Part 53 of this chapter that would apply if an application for a reference or equivalent method determination were submitted for the method of which the analyzer is representative, except that paragraph (d)(1)(i) of this section shall apply in lieu of the range requirement specified in Table B–1;

(iii) The pollutant intended to be measured with the analyzer occurs on some occasions in concentrations more than two times the upper range limit specified in Table B–1 in the geographical area in which use of the analyzer is proposed; and

(iv) The Administrator determines that the resolution of each range that is broader than that permitted by paragraph (c) of this section and is proposed to be used for purposes of § 51.17(a) is adequate for its intended use. For purposes of this paragraph (d), "resolution" means the ability of the analyzer to detect small changes in concentration.

(2) Requests for approval under this paragraph (d) shall be submitted as provided in paragraph (e) of this section.

(3) Except as provided in paragraph (e)(3) of this section, each request submitted under this paragraph (d) shall contain the information specified in paragraph (e)(2) of this section and the following information:

(i) The range or ranges proposed to be used for purposes of § 51.17(a);

(ii) Test data, records, calculations, and test results as specified in paragraph (e)(2)(ii) of this section for each range proposed to be used for purposes of § 51.17(a);

(iii) An identification and description of the geographical area in which use of the analyzer is proposed;

(iv) Data or other information demonstrating that the pollutant intended to be measured with the analyzer occurs in concentrations more than two times the upper range limit specified in Table B–1 in Subpart B of Part 53 in the geographical area in which use of the analyzer is proposed; and

(v) Test data or other information demonstrating the resolution of each range that is broader than that permitted by paragraph (c) of this section and is proposed to be used for purposes of § 51.17(a).

(4) Any person who has obtained approval of a request under this paragraph (d) shall assure that the analyzer for which approval was obtained is used for purposes of § 51.17(a) only in the geographical area identified in the request and only while operated in the range or ranges specified in the request.

(e) *Requests for approval; withdrawal of approval.* (1) Requests for approval under paragraphs (b), (c), or (d) of this section shall be submitted to:

Director, Environmental Monitoring and Support Laboratory, Department E (MD–75), United States Environmental Protection Agency, Environmental Research Center, Research Triangle Park, North Carolina 27711.

(2) Except as provided in paragraph (e)(3) of this section, each request shall contain: (i) A statement identifying the analyzer (e.g., by serial number) and the method of which the analyzer is representative (e.g., by manufacturer and model number); and

(ii) Test data, records, calculations, and test results for the analyzer (or the method of which the analyzer is representative) as specified in Subpart B, Subpart C, or both (as applicable) of Part 53 of this chapter.

(3)(i) A request may concern more than one analyzer or geographical area and may incorporate by reference any data or other information known to EPA from one or more of the following:

(A) An application for a reference or equivalent method determination submitted by any person for the method of which the analyzer is representative or testing conducted by the applicant or by EPA in connection with such an application;

(B) Testing of the method of which the analyzer is representative at the initiative of the Administrator under § 53.7 of this chapter; or

(C) A previous or concurrent request for approval submitted by any person under this paragraph (e) of this section.

(ii) To the extent that such incorporation by reference provides data or information required by this paragraph (e) or by paragraph (b), (c), or (d) of this section, independent data or duplicative information need not be submitted.

(4) After receiving a request under this paragraph (e), the Administrator may request such additional testing or information or conduct such tests as may be necessary in his judgment for a decision on the request.

(5) If the Administrator determines, on the basis of any information available to him, that any of the determinations or statements on which approval of a request under this paragraph (e) of this section was based are invalid or no longer valid, or that the requirements of paragraphs (b)(4), (c)(4), or (d)(4) of this section, as applicable, have not been met, he may withdraw the approval after affording the person who obtained the approval an opportunity to submit information and arguments opposing such action.

(f) *Modifications of methods by users.* (1) Except as otherwise provided in this paragraph (f) of this section, no reference method, equivalent method or alternative method that is used for purposes of § 51.17(a) shall be modified in a manner that will or might significantly alter the performance characteristics of the method without prior approval by the Administrator. For purposes of this paragraph (f) of this section, "alternative method" means an analyzer, the use of which has been approved under paragraph (b), (c), or (d) of this section, or some combination thereof.

(2) Requests for approval under this paragraph (f) shall be submitted to the address specified in paragraph (e)(1) of this section.

(3) Each request submitted under this paragraph (f) shall include: (i) A description, in such detail as may be appropriate, of the desired modification;

(ii) A brief statement of the purpose(s) of the modification, including any reasons for considering it necessary or advantageous;

(iii) A brief statement of belief concerning the extent to which the modification will or may affect the performance characteristics of the method; and

(iv) Such further information as may be necessary to explain and support the statements required by paragraphs (f)(3)(ii) and (iii) of this section.

(4) Within 75 days after receiving a request for approval under this paragraph (f) of this section and such further information as he may request for purposes of his decision, the Administrator will approve or disapprove the modification in question by letter to the person or agency requesting such approval.

(5) A temporary modification that will or might alter the performance characteristics of a reference, equivalent, or alternative method may be made without prior approval under this paragraph (f) of this section if the method is not functioning or is malfunctioning, provided that parts necessary for repair in accordance with the applicable operation manual cannot be obtained within 45 days. Unless such temporary modification is later approved under paragraph (f)(4) of this section, the temporarily modified method shall be repaired in accordance with the applicable operation manual as quickly as practicable but in no event later than 4 months after the temporary modification was made, unless an extension of time is granted by the Administrator. Unless and until the temporary modification is approved, air quality data obtained with the method as temporarily modified shall be clearly identified as such when submitted in accordance with § 51.7 and shall be accompanied by a report containing the information specified in paragraph (f)(3) of this section. A request that the Administrator approve a temporary modification may be submitted in accordance with paragraphs (f)(1)–(4) of this section; in such cases the request will be considered as if a request for prior approval had been made.

(Secs. 4(a) and 15(c)(2), Pub. L. 91-604, 84 Stat. 1679, 1713 (42 U.S.C. 1857c-5, 1857g(a)).)

PART 53—AMBIENT AIR MONITORING REFERENCE AND EQUIVALENT METHODS

3. The title "§ 53.16 *Supersession of reference methods*" is added at the end of the table of sections for Subpart A.

4. Section 53.1 is amended by revising paragraphs (e), (f) and (k) to read as follows:

§ 53.1 Definitions.

* * * * *

(e) "Reference method" means a method of sampling and analyzing the ambient air for an air pollutant that is specified as a reference method in an appendix to Part 50 of this chapter, or a method that has been designated as a reference method in accordance with this part; it does not include a method for which a reference method designation has been cancelled in accordance with § 53.11 or § 53.16 of this chapter.

(f) "Equivalent method" means a method of sampling and analyzing the ambient air for an air pollutant that has been designated as an equivalent method in accordance with this part; it does not include a method for which an equivalent method designation has been cancelled in accordance with § 53.11 or § 53.16.

* * * * *

(k) "Applicant" means a person who submits an application for a reference or equivalent method determination under § 53.4, or a person who assumes the rights and obligations of an applicant under § 53.7.

5. Section 53.2 is revised to read as follows:

§ 53.2 General requirements for a reference method determination.

(a) *Manual methods:* Except as provided in § 53.16, manual methods will not be considered for reference method determinations under this part.

NOTE: As defined in § 53.1(e), "reference method" includes a manual method specified in an appendix to Part 50 of this chapter. Except as provided in § 53.16, the provisions of this part are inapplicable to such a method.

(b) *Automated methods:* A candidate automated method must utilize the measurement principle and calibration procedures specified in the appropriate appendix to Part 50 of this chapter and meet the requirements specified in Subpart B of this part.

NOTE: Except as provided in § 53.16, an automated method will not be considered for a reference method determination if a manual reference method is specified in the appropriate appendix to Part 50.

6. Section 53.7 is amended by adding new paragraphs (b) and (c) to read as follows:

§ 53.7 Testing of methods at the initiative of the Administrator.

* * * * *

(b) In the absence of an application requesting the Administrator to consider revising an appendix to Part 50 of this chapter in accordance with § 53.16, the Administrator may conduct such tests and compile such information as may be necessary in his judgment to make a determination under § 53.16(d) and on the basis of the tests and information make such a determination.

(c) If a method tested in accordance with this section is designated as a reference or equivalent method in accordance with § 53.8 or is specified or designated as a reference method in accordance with § 53.16, any person who offers the method for sale as a reference or equivalent method thereafter shall assume the rights and obligations of an applicant for purposes of this part with the exception of those pertaining to submission and processing of applications.

7. Section 53.9 is amended by adding new paragraphs (d), (e), (f), and (g) to read as follows:

§ 53.9 Conditions of designation.

* * * * *

(d) Any analyzer offered for sale as a reference or equivalent method shall bear a prominent, permanently affixed label or sticker indicating that the analyzer has been designated by EPA as a reference method or as an equivalent method (as applicable) in accordance with this part.

(e) If an analyzer is offered for sale as a reference or equivalent method but has one or more selectable ranges, the label or sticker required by paragraph (d) of this section shall be placed in close proximity to the range selctor and shall indicate clearly which range or ranges have been designated as parts of the reference or equivalent method.

(f) An applicant who offers analyzers for sale as reference or equivalent methods shall maintain an accurate and current list of the names and mailing addresses of all ultimate purchasers of such analyzers. For a period of seven years after publication of the reference or equivalent method designation applicable to such an analyzer, the applicant shall notify all ultimate purchasers of the analyzer within 30 days if the designation has been cancelled in accordance with § 53.11 or § 53.16 or if adjustment of the analyzer is necessary under § 53.11(b).

(g) If an applicant modifies an analyzer that has been designated as a reference or equivalent method, the applicant shall not sell the analyzer as modified as a reference or equivalent method nor attach a label or sticker to the analyzer as modified under paragraph (d) or (e) of this section until he has received notice under § 53.14(c) that the existing designation or a new designation will apply to the analyzer as modified or has applied for and received notice under § 53.8(b) of a new reference or equivalent method determination for the analyzer as modified.

8. In § 53.14 the phrase "(see § 53.9 (g))" is added at the end of the first sentence of paragraph (a).

9. A new § 53.16 is added to read as follows:

§ 53.16 Supersession of reference methods.

(a) This section prescribes procedures and criteria applicable to requests that the Administrator specify a new reference method, or a new measurement principle and calibration procedure on which reference methods shall be based, by revision of the appropriate appendix to Part 50 of this chapter. Such action will ordinarily be taken only if the Administrator determines that a candidate method or a variation thereof is substantially superior to the existing reference method(s).

(b) In exercising his discretion under this section, the Administrator will consider: (1) the benefits, in terms of the requirements and purposes of the Act, that would result from specifying a new reference method or a new measurement principle and calibration procedure; (2) the potential economic consequences of such action for State and local control agencies; and (3) any disruption of State and local air quality monitoring programs that might result from such action.

(c) An applicant who wishes the Administrator to consider revising an appendix to Part 50 of this chapter on the ground that the applicant's candidate method is substantially superior to the existing reference method(s) shall submit an application for a reference or equivalent method determination in accordance with § 53.4 and shall indicate therein that he desires such consideration. The application shall include, in addition to the information required by § 53.4, data and any other information supporting the applicant's claim that the candidate method is substantially superior to the existing reference method(s).

(d) After receiving an application under paragraph (c) of this section, the Administrator will publish notice of its receipt in the FEDERAL REGISTER and, within 75 calendar days after receipt of the application, take one of the following actions:

(1) Determine that it is appropriate to propose a revision of the appendix in question and send notice of the determination to the applicant;

(2) Determine that it is inappropriate to propose a revision of the appendix in question, determine whether the candidate method is a reference or equivalent method, and send notice of the determinations, including a statement of reasons for the determination not to propose a revision, to the applicant;

(3) Send notice to the applicant that additional information must be submitted before a determination can be made and specify the additional information that is needed (in such cases, the 75-day period shall commence upon receipt of the additional information);

(4) Send notice to the applicant that additional tests are necessary, specifying what tests are necessary and how they shall be interpreted (in such cases, the 75-day period shall commence upon receipt of the additional test data); or

(5) Send notice to the applicant that additional tests will be conducted by the Administrator, specifying the nature of and reasons for the additional tests and the estimated time required (in such cases, the 75-day period shall commence one calendar day after the additional tests have been completed).

(e)(1) After making a determination under paragraph (d)(1) of this section, the Administrator will publish a notice of proposed rulemaking in the FEDERAL REGISTER. The notice will indicate that the Administrator proposes (i) to revise the appendix in question; (ii) where the appendix specifies a measurement principle and calibration procedure, to cancel reference method designations based on the appendix; and (iii) to cancel equivalent method designations based on the existing reference method(s). The notice will include the terms or substance of the proposed revision, will indicate what period(s) of time the Administrator proposes to allow for replacement of existing methods under § 51.17a(a)(4) of this chapter, and will solicit public comments on the proposal with particular reference to the considerations set forth in paragraphs (a) and (b) of this section.

(2) If, after consideration of comments received, the Administrator determines that the appendix in question should be revised, he will by publication in the FEDERAL REGISTER (i) promulgate the proposed revision, with such modifications as may be appropriate in view of comments received; (ii) where the appendix (prior to revision) specifies a measurement principle and calibration procedure, cancel reference method designations based on the appendix; (iii) cancel equivalent method designations based on the existing reference method(s); and (iv) specify the period(s) that will be allowed for replacement of existing methods under § 51.17a(a)(4) of this chapter, with such modifications from the proposed period(s) as may be appropriate in view of comments received. Cancelled designations will be deleted from the list maintained under § 53.8(c). The requirements and procedures for cancellation set forth in

§ 53.11 shall be inapplicable to cancellation of reference or equivalent method designations under this section.

(3) If the appendix in question is revised to specify a new measurement principle and calibration procedure on which the applicant's candidate method is based, the Administrator will take appropriate action under § 53.5 to determine whether the candidate method is a reference method.

(4) Upon taking action under paragraph (e)(2) of this section, the Administrator will send notice of the action to all applicants for whose methods reference and equivalent method designations are cancelled by such action.

(f) An applicant who has received notice of a determination under paragraph (d)(2) of this section may appeal the determination by taking one or more of the following actions:

(1) The applicant may submit new or additional information in support of the application.

(2) The applicant may request that the Administrator reconsider the data and information already submitted.

(3) The applicant may request that any test conducted by the Administrator that was a material factor in making the determination be repeated.

(Sec. 15(c)(2), Pub. L. 91-604, 84 Stat. 1713 (42 U.S.C. 1857g(a)).)

[FR Doc.76-7359 Filed 3-16-76;8:45 am]

ENVIRONMENTAL PROTECTION AGENCY

[40 CFR Part 50]

[FRL 495-2]

NITROGEN DIOXIDE IN THE ATMOSPHERE

Measurement Principle and Calibration Procedure

Notice is hereby given that the Environmental Protection Agency (EPA) is considering an amendment to Part 50, Appendix F, of Title 40, Code of Federal Regulations, as set forth below. The purpose of this amendment is to establish a new measurement principle and calibration procedure to replace the existing reference method for the measurement of nitrogen dioxide (NO_2) in the atmosphere. As discussed more fully below, proposed amendments to 40 CFR Part 53, set forth elsewhere in this issue of the FEDERAL REGISTER, provide for designation of new NO_2 reference methods based on the proposed measurement principle and calibration procedure.

BACKGROUND

Pursuant to section 109 of the Clean Air Act (42 U.S.C. 1857c-4), as amended in 1970, EPA promulgated national primary and secondary ambient air quality standards for six pollutants, including NO_2, on April 30, 1971 (36 FR 8186). These standards are now codified as 40 CFR Part 50. At the same time, EPA published reference methods, described in appendices to Part 50, to be used by EPA and by State and local agencies in measuring ambient concentrations of the six air pollutants. The reference method for NO_2 is presently set forth in Appendix F to Part 50.

Apparent deficiencies with the reference method for NO_2 were subsequently identified, and EPA announced on June 14, 1972 (37 FR 11826), that the method was suspected of being unreliable and would be re-evaluated.

In a notice published on June 8, 1973 (38 FR 15174), EPA announced its intention, following completion of additional studies, to propose amendments to 40 CFR Part 50, Appendix F, to withdraw the current reference method for NO_2 and designate a new one. Technical descriptions of three methods or measurement principles for measurement of NO_2 were set forth at that time. The notice indicated that EPA would conduct complete evaluations and collaborative testing of these and possibly other methods. Interested persons were invited to submit pertinent information and comments. The notice also indicated that EPA would subsequently select and propose a new method or measurement principle to replace the existing NO_2 reference method. As discussed more fully below, EPA has completed its evaluation of various candidate methods and measurement principles and proposes to replace the existing reference method for NO_2 with the continuous chemiluminescence measurement principle and specified calibration procedures.

On February 18, 1975 (40 FR 7044), EPA promulgated 40 CFR Part 53, entitled "Ambient Air Monitoring Reference and Equivalent Methods," which established requirements and procedures governing designation of reference or equivalent methods for the measurement of specified pollutants. Because replacement of the existing reference method for NO_2 was under consideration as discussed above, the new Part 53 did not provide for designation of reference or equivalent methods for NO_2. However, the basic concepts and policies established in the new Part 53 are pertinent to the amendment described in this notice and, under the amendments to Part 53 proposed elsewhere in this issue of the FEDERAL REGISTER, will apply to designation of reference or equivalent methods for NO_2 in the future.

COMMENTS RECEIVED

In response to the June 8, 1973, notice inviting public involvement in the selection of a new method or measurement principle to replace the existing NO_2 reference method, EPA received comments from some 20 respondents. Many of the respondents reiterated or corroborated the conclusion that the existing NO_2 reference method is inadequate, that a better method should be established, and that candidate methods should be carefully evaluated before a replacement is selected. Also, many of the respondents offered information and technical data pertinent to one or more of the methods or measurement principles, or pointed out various advantages or disadvantages to be considered in making the selection. A few respondents offered or suggested additional methods for consideration. Others indicated needs for better method descriptions, better calibration procedures, and better calibration standards than those which were currently available.

All of the comments were carefully considered and much of the information was used in the planning and design of the performance and collaborative tests conducted by EPA, in the evaluation of the candidate methods and measurements principles, and in the final selection of the measurement principle proposed today. Documents summarizing the comments and EPA's responses to them are available from the Environmental Monitoring and Support Laboratory, United States Environmental Protection Agency, Research Triangle Park, North Carolina 27711, attention Dr. S.D. Shearer (MD-75). The same documents as well as the comments themselves will be available for inspection and copying at the United States Environmental Protection Agency, Public Information Reference Unit, Room 2922 (EPA Library), 401 M Street, SW., Washington, D.C. 20460.

TECHNICAL EVALUATION TESTS

Ultimately, EPA tested and evaluated three manual methods and two automated (analyzers) based on two measurement principles. The manual methods evaluated were (1) Sodium Arsenite (orifice bubbler), (2) Triethanolamine-Guiacol-Sulfite (TGS) with orifice bubbler, and (3) Triethanolamine (TEA) with orifice bubbler. The measurement principles tested were (1) Continous Colorimetric and (2) Continuous Chemiluminescence. Although the TGS and TEA methods were not identified as candidate methods in the June 8, 1973, notice, subsequent improvements in the methods and further consideration suggested that they should also be tested.

Two types of tests were used in the evaluations—method standarization tests and interrelatability tests. In the method standardization tests, information from developers, experienced users, and technical literature was first studied to establish the best technical description of the manual methods. Second, a statistical ruggedness test was used to identify critical variables affecting the method or analyzer performance. The technical or procedural description and specifications for the methods and analyzers were then revised to minimize adverse effects of these critical variables. Finally, a comprehensive interlaboratory collaborative test was conducted to determine the performance of the method or analyzer in actual use under typical on-site conditions by typical users. These tests were carried out with ambient air samples augmented as necessary with artificially generated NO_2. Analysis of the collaborative test data yielded statistical estimates of bias and precision.

The interrelatability tests were used to determine the intra-method and inter-method comparability of the various methods and analyzers under carefully controlled conditions. (The TEA method had been eliminated by the previous tests and was not included in these tests.) The methods and analyzers under test were arranged to simultaneously measure identical samples of either ambient or clean air augmented with artifically produced NO_2. The various test conditions were designed to include (1) tests to investigate comparability of the methods over NO_2 concentration ranges expected to occur in ambient air; (2) tests for comparability under various patterns of NO_2 concentration fluctuations; and (3) special tests for possible interference from ozone. Data from these tests were analyzed and interpreted statistically for use in evaluating the various methods and measurement principles.

RESULTS OF TECHNICAL EVALUATIONS

The TEA method was determined to require a bubble-dispersing frit to achieve high collection efficiency. The use of a frit involves several serious disadvantages in comparison to use of an orifice type bubbler (as in the TGS and arsenite methods). For this reason, the TEA methods was not considered suitable for replacement of the existing reference method and was not evaluated further. Evaluation of the Continuous Colorimetric measurement principle indicated a quite variable and significant positive bias, a slow response time, and a negative interferent response to ozone.

In addition, the static calibration procedure used with this measurement principle was unreliable. For these reasons, the Continuous Colorimetric measurement principle was determined to be inferior to the Continuous Chemiluminescence measurement principle and the other two manual methods and therefore was not given further consideration for replacement of the existing reference method.

Evaluations of the TGS and Arsenite methods and the Continuous Chemiluminescence measurement principle indicated that all would be technically acceptable as replacements for the existing reference method. The rationale for selection of the continuous chemiluminescence measurement principle is discussed below.

This summary of the technical evaluations is necessarily brief. A document providing a more detailed summary of the evaluations (and of the rationale for selection of the continuous chemiluminescence measurement principle) and comprehensive test reports for each of the methods or measurement principles tested are available from the Environmental Monitoring and Support Laboratory, United States Environmental Protection Agency, Research Triangle Park, North Carolina, 27711, attention Dr. S. D. Shearer (MD–75) and will be available for inspection and copying at the United States Environmental Protection Agency, Public Information Reference Unit, Room 2922 (EPA Library), 401 M Street, SW., Washington, D.C. 20460.

Selection Rationale

A number of considerations entered into EPA's selection of the Continuous Chemiluminescence measurement principle as the proposed replacement for the existing NO_2 reference method. In general, the most significant factors were as follows:

(1) *Technical evaluations.* On the basis of the technical evaluations, consideration was limited to the Arsenite and TGS methods and the continuous chemiluminescence principle. The evaluations also provided quantitative performance indicators such as collection efficiency, bias, precision, interferences, and intra-method and inter-method correlations which were used to assess the relative technical merits of each method or measurement principle.

(2) *Public Comments.* Careful consideration was given to the comments, data, recommendations, and other information submitted to EPA in response to the Federal Register notice of June 8, 1973, referred to above.

(3) *Equivalency determinations.* An important function of a reference method is its role in testing of candidate methods to determine equivalency. (See 40 CFR Part 53 and the amendments to Part 53 proposed elsewhere in this issue of the Federal Register.) For this purpose, reference methods must be readily available and usable under field sampling conditions. Although either of the manual (24-hour) methods considered could serve this purpose, an automated method offers significant advantages as discussed more fully below.

(4) *Short term measurements.* For determining compliance with the National Ambient Air Quality Standard for both NO_2 and pohtochemical oxidants, hour measurements are adequate. However there is a growing need for short-term (hourly average) data to analyze diurnal patterns, to study the relationship between emission sources and receptor or monitoring sites, to develop effective and efficient control strategies for both NO_2 and photochemical oxidants, and to provide data during air pollution episodes. Reference methods based on the Continuous Chemiluminescence principle would meet these needs, whereas the 24-hour manual methods could not. If a short term standard should ever be promulgated in the future, it would require supersession of any 24-hour reference method, which in turn would require cancellation of all equivalent method designations based on the superseded reference method.

(5) *Economic impact.* The use of analyzers based on the chemiluminescent measurement principle is more expensive than the use of manual bubbler methods. However, as discussed more fully below, EPA is confident that equivalent manual methods will be available for use in control agency networks, obviating any need for such agencies to purchase large quantities of chemiluminescent analyzers. Where reference methods must be used, the cost of chemiluminescent analyzers is comparable to the cost of other types of automated analyzers.

General Discussion

Consistent with the basic definitions and policies established in 40 CFR Part 53, the proposed replacement for the existing NO_2 reference method is a "measurement principle and calibration procedure," rather than a reference method per se. In other words, the proposed Appendix F will specify only the measurement principle and associated calibration procedure on which reference methods for NO_2 must be based. As with reference methods for carbon monoxide and photochemical oxidants, analyzers based on the specified measurement principle and calibration procedure will be designated as reference methods if they are found to meet the performance specifications and other requirements set forth in 40 CFR Part 53 (see the amendments to Part 53 proposed elsewhere in this issue of the Federal Register) in accordance with the procedures set forth in Part 53. Note that the proposed calibration procedure for NO_2 reference methods includes two alternate procedures, either of which will be acceptable. Also, inasmuch as Appendix F will specify only the measurement principle and calibration procedure applicable to NO_2 reference methods, it would be possible to construct different types of analyzers based on this single measurement principle. Therefore a number of different analyzers could be designated as reference methods for NO_2.

As indicated above, analyzers based on the chemiluminescence measurement principle will be considered reference methods only if they are designated as such in accordance with Part 53. Accordingly, immediately after final promulgation of the revised Appendix F, there will be no NO_2 reference method until at least one analyzer has been designated as such under Part 53. In addition, equivalent methods for NO_2 cannot be designated until at least one reference method is available for the comparison testing required by Subpart C of Part 53 for equivalent method determinations. This situation should present no problem for State and local control agencies because proposed amendments to 40 CFR Part 51, appearing elsewhere in this issue of the Federal Register, would permit them to use existing NO_2 analyzers for 3 years and existing manual methods (excepting the existing reference method) for 1 year after promulgation of these amendments. Also, it may be possible for State and local control agencies to use existing analyzers for their useful lives in various special circumstances under amendments to § 51.17a promulgated elsewhere in this issue of the Federal Register.

In proposing that NO_2 reference methods be based on the chemiluminescence measurement principle, EPA is not necessarily advocating or encouraging increased use of chemiluminescent analyzers. The technical evaluation of the Arsenite and TGS manual methods indicated that both methods had good performance and would likely be more economical to use than automated methods. Accordingly, EPA is very interested in testing and, if they meet the requirements of Part 53, designating these two methods as equivalent methods (see 40 CFR 53.7). Designation of these methods as equivalent methods would allow State and local control agencies which are already using one or both of these methods to continue to use them after the 1 year time limit for existing methods mentioned above. And other control agencies could use either of the manual methods instead of more expensive automated analyzers.

EPA is prepared to carry out the necessary equivalency tests for these two manual methods as indicated above; however, such tests cannot be conducted until at least one chemiluminescence analyzer has been designated as a reference method and is available for comparison testing. EPA prefers to delay the equivalency testing of the TGS and Arsenite methods until an analyzer has been designated as a reference method through a normal application for a reference method designation from an analyzer manufacturer. If, however, such an application is not received within 3 months after promulgation of this amendment, EPA believes (in view of the 1 year time limit for use of existing manual methods) that it must itself initiate testing and designation of a reference method under 40 CFR 53.7 in order to complete the equivalency tests of the Arsenite and TGS methods in a timely fashion. Since the latter course could give

a competitive advantage to the manufacturer of the analyzer designated as a reference method, EPA encourages manufacturers of chemiluminescent analyzers to submit reference method applications for such analyzers within the three month period if possible. As soon as a reference method has been designated, EPA will conduct the equivalency tests of the two manual methods and, if either or both are designated as equivalent methods, will announce the designations in accordance with the provisions of Part 53.

EPA has previously considered whether the deficiencies intended in the existing NO_2 reference method affect the validity of the national primary and secondary ambient air quality standard for NO_2 and has concluded that the standard remains valid. See 38 FR 15180, 15182–83 (June 6, 1973). See also "Air Quality and Automobile Emission Control", a report prepared for the Committee on Public Works, United States Senate, 93d Cong., 2d Sess., by the Coordinating Committee on Air Quality Studies, National Academy of Sciences-National Academy of Engineering (Committee Print 1974); Finklea, J. F., Thomas R. Hauser, Larry E. Niemeyer, and Carl Shy, "Nitrogen Oxides Air Pollution: A Status Report", Read before the 66th Annual Meeting of the American Institute of Chemical Engineers, November 15, 1973, Philadelphia, Pa.; Hauser, T. R. and Carl M. Shy, "Position Paper: NO_x Measurement", *Environmental Science and Technology*, Volume 6, Number 10, October 1972. Although continuing study of health effects related to NO_2 may require revision of the standard in the future, EPA believes the proposed change in reference methods does not in itself require revision of the standard. Accordingly, no revision of the standard is being proposed at this time.

In accordance with EPA guidelines published October 21, 1974 (39 FR 37419), it has been determined that the proposed action will not make the attainment of standards substantially easier or more difficult or affect the basis on which the standards were established. Additionally, the environmental impacts of the proposed action have been judged insufficiently substantial to warrant preparation of an environmental impact statement. An assessment of the environmental impacts of the action indicated that the major impact will be the purchasing and placing into operation of a small number of NO_2 monitors. The number is expected to be small because considerable NO_2 monitoring is presently being performed by State and local agencies.

Interested persons may submit written comments on the proposed amendment in triplicate to the Director, Environmental Monitoring and Support Laboratory, Department E (MD–75), United States Environmental Protection Agency, Research Triangle Park, North Carolina, 27711. All comments postmarked on or before May 3, 1976 will be considered. All comments will be available for public inspection during normal business hours at the address specified above and at the United States Environmental Protection Agency, Public Information Reference Unit, Room 2922 (EPA Library), 401 M Street, S.W., Washington, D.C. 20460. The amendment, modified as the Administrator deems appropriate after consideration of comments, will become effective approximately 30 days after promulgation.

40 CFR 53.16, promulgated elsewhere in this issue of the FEDERAL REGISTER, establishes procedures and criteria for replacement ("supersession") of reference methods. Under § 53.16(a) and (b), the Administrator must consider certain factors (*e.g.*, potential economic consequences for State and local control agencies) before replacing an existing reference method. In the present case, the Administrator has previously determined that the existing NO_2 reference method is deficient and must be replaced, and public comments received on the June 6, 1973, FEDERAL REGISTER cited above support that conclusion. In addition, it is believed that replacement of the existing reference method with the proposed Appendix F would not cause unreasonable economic consequences for State and local control agencies or substantial disruption of State and local monitoring programs, particularly because use of existing NO_2 analyzers and manual methods (excepting the existing reference method) would be permitted for 5 years and 1 year, respectively, under the amendments to 40 CFR Part 51 proposed elsewhere in this issue of the FEDERAL REGISTER. However, comments are particularly invited on the considerations set forth in § 53.16(a) and (b).

This notice of proposed rulemaking is issued under the authority of section 109 of the Clean Air Act (42 U.S.C. 1857c–4), as amended by section 4 of Pub. L. 91–604, 84 Stat. 1679.

Dated: March 3, 1976.

RUSSELL E. TRAIN,
Administrator.

It is proposed to amend Part 50 of Title 40, Code of Federal Regulations, by revising Appendix F to read as follows:

APPENDIX F—MEASUREMENT PRINCIPLE AND CALIBRATION PROCEDURE FOR THE MEASUREMENT OF NITROGEN DIOXIDE IN THE ATMOSPHERE (GAS CHEMILUMINESCENCE)

1. *Principle and Applicability.*

1.1 Atmospheric concentration of nitrogen dioxide (NO_2) are measured indirectly by photometrically measuring the light intensity, at wavelengths greater than 600 nanometers, resulting from the chemiluminescent reaction of nitric oxide (NO) with ozone (O_3).[1,2,3] NO_2 is first quantitatively reduced to NO[4,5,6] by means of a converter. NO, which commonly exists in ambient air together with NO_2, passes through the converter unchanged causing a resultant total NO_x concentration equal to $NO+NO_2$. A sample of the input air is also measured without having passed through the converter. This latter NO measurement is subtracted from the former measurement ($NO+NO_2$) to yield the final NO_2 measurement. The NO and $NO+NO_2$ measurements may be made concurrently with dual systems, or cyclically with the same system provided the cycle time does not exceed 2 minutes.

1.2 An analyzer based on this principle will be considered a reference method only if it has been designated as a reference method in accordance with Part 53 of this chapter.

2. *Calibration.*

2.1 Alternative A—Gas phase titration (GPT) of an NO standard with O_3.

2.1.1 Principle. This calibration technique is based upon the rapid gas phase reaction between NO and O_3 to produce stoichiometric quantities of NO_2 in accordance with the following equation:[7]

$$NO+O_3 \rightarrow NO_2+O_2; \quad k = 1.0\times10^7 \text{ liter mole}^{-1} \text{ sec}^{-1} \quad (1)$$

The quantitative nature of this reaction is such that when the NO concentration is known, the concentration of NO_2 can be determined. Ozone is added to excess NO in a dynamic calibration system, and a chemiluminescent NO analyzer is used as an indicator of changes in NO concentration. Upon the addition of O_3, the decrease in NO concentration observed on the calibrated NO analyzer is equivalent to the concentration of NO_2 produced. The amount of NO_2 generated may be varied by adding variable amounts of O_3 from a stable uncalibrated ozone generator.[8]

2.1.2 Apparatus. Figure 1, a schematic of a typical GPT apparatus, shows the suggested placement of the components listed below. All connections between components in the calibration system downstream from the O_3 generator should be glass or Teflon.

2.1.2.1 Air flow controllers. Devices capable of maintaining constant air flow within ±2%.

2.1.2.2 NO flow controller. A device capable of maintaining constant NO flow within ±2%. Component parts in contact with the NO should be of a non-reactive material.

2.1.2.3 Air flowmeters. Properly calibrated flowmeters capable of measuring and monitoring air flows within ±2%.

2.1.2.4 NO flowmeter. A properly calibrated flowmeter capable of measuring and monitoring NO flows within ±2%. (Rotameters have been reported to operate unreliably when measuring low NO flows and are not recommended.)

2.1.2.5 Pressure regulator for standard NO cylinder. This regulator must have non-reactive internal parts and a suitable delivery pressure.

2.1.2.6 Ozone generator. Capable of generating sufficient and stable levels of O_3 for reaction with NO to generate NO_2 concentrations in the range required.

2.1.2.7 Reaction chamber. A glass chamber for the quantitative reaction of O_3 with excess NO. The chamber should be of sufficient volume such that the following criterion is met: The product of the residence time of the reactant gases in the chamber (in seconds) times the air flow split ratio must be at least 500 seconds. Residence time is defined as the volume of the reaction chamber divided by the total flow through the chamber. The air flow split ratio is the total air flow (measured at the manifold) divided by the air flow through the ozone generator. To keep the residence time as short as possible and in turn to keep the reaction volume to a minimum, only a reduced portion of the total air flow actually passes through the ozone generator. (See reference 12 for more guidance.)

2.1.2.8 Mixing chamber. A glass chamber of proper design to provide thorough mixing of pollutant gas stream and diluent air. The residence time is not critical.

2.1.2.9 Output manifold. The output manifold should be constructed of glass or Teflon

of sufficient diameter to insure a minimum pressure drop at the analyzer connection. The system must have a vent designed to insure atmospheric pressure at the manifold and to prevent ambient air from entering the manifold.

2.1.2.10 Chemiluminescent NO analyzer. The NO channel of the chemiluminescent NO_2 analyzer under calibration may be used.

2.1.3 Reagents.

2.1.3.1 Cylinder containing NO standard. Cylinder containing 50 to 100 ppm NO in N_2 with less than 1 ppm NO_2. The cylinder must be traceable to a National Bureau of Standards NO in N_2 Standard Reference Material (SRM 1683 or SRM 1684) or NO_2 Standard Reference Material (SRM 1629). The cylinder (working standard) should be recertified on a regular basis as determined by the local quality control program.

2.1.3.2 Zero aid. Air, free of contaminants which will cause a detectable response on the NO and/or NO_2 analyzer or which might react with either NO or NO_2 in the gas phase titration. A procedure for generating zero air is given in reference 11.

2.1.4 Procedure.

2.1.4.1 Assemble the apparatus necessary for dynamic calibration. A typical system is shown in Figure 1.

2.1.4.2 Insure that all flowmeters are properly calibrated under the conditions of use against a reliable standard such as a soap-bubble meter or wet-test meter traceable to NBS. All volumetric flow rates should be corrected to 25°C and 760 mm Hg.

2.1.4.3 Precautions must be taken to remove O_2 and other contaminants from the NO pressure regulator and delivery system prior to the start of calibration to avoid any conversion of the standard NO to NO_2. Failure to do so can cause significant errors in calibration. This problem may be minimized by (1) pretreatment of the regulator; e.g., by careful evacuation of regulator when possible or flushing with pure N_2 in a vacuum oven at 50°C; (2) thorough flushing of the regulator and delivery system with NO after it has been connected to the standard cylinder; and (3) not removing the regulator from the cylinder between calibrations unless absolutely necessary.

2.1.4.4 Allow sufficient time for analyzer warm-up and stabilization. Adjust the diluent air and O_3 generator air flows to obtain the total air flow required at the output manifold and to obtain the desired air flow split ratio. The air flow through the O_3 generator should not exceed 10% of the total air flow. The total air flow must exceed the demand of the analyzer(s) under calibration to insure that no ambient air is pulled into the manifold vent. Allow the analyzer(s) to sample zero air until stable NO and NO_2 responses are obtained. After the responses have stabilized, make the proper zero adjustments to the NO and NO_2 (and NO_x if desired) analyzer(s).

2.1.4.5 Preparation of NO calibration curve.

2.1.4.5.1 Adjust the NO flow from the standard NO cylinder to generate an NO concentration of approximately 80% of the upper range limit (URL) of the NO range. The exact concentration is calculated from:

$$[NO]=\frac{F_{NO}\times C_{NO}}{F_{NO}+F_O} \quad (2)$$

where:

$[NO]$=diluted NO concentration, parts per million
F_{NO}=NO flow, cubic centimeter per minute
C_{NO}=cylinder NO concentration, parts per million
F_O=zero air flow, cubic centimeter per minute

Sample this NO concentration until the NO analyzer response has stabilized. Adjust the NO span control to obtain a full scale response equal to the desired URL. If substantial adjustment of the span control is necessary, it may be necessary to recheck the zero and span adjustments by repeating steps 2.1.4.4 and 2.1.4.5.1.

2.1.4.5.2 Repeat at several concentration values (at least five are suggested) by decreasing the NO flow or increasing the diluent air flow to give lower NO concentrations. Calculate the exact NO concentration generated using equation (2). Record the analyzer response for each NO concentration. Plot the analyzer response (y-axis) versus the calculated NO concentration (x-axis) and draw the NO calibration curve. For subsequent calibrations, this curve may be verified with a two-point calibration.

2.1.4.6 Preparation of NO_2 calibration curve.

2.1.4.6.1 Assuming the NO_2 zero has been properly adjusted while sampling zero air in step 2.1.4.4, adjust the NO flow and air flow to generate an NO concentration near 90% of the URL of the NO range. Using equation (2), calculate and record this NO concentration as $[NO]_{orig}$.

2.1.4.6.2 Observe the analyzer's NO_2 response. A positive NO_2 response may be caused by (1) analyzer malfunction, (2) air or other contamination in the NO delivery system, or (3) NO_2 impurity in the NO cylinder. Consult the analyzer's instruction manual or manufacturer to correct analyzer malfunctions. Contamination in the NO delivery system is discussed in 2.1.4.3. Any NO_2 impurity in the NO cylinder is determined in the following procedure and a corresponding correction can subsequently be made for it. A negative NO_2 response would usually indicate analyzer malfunction.

2.1.4.6.3 Adjust the ozone generator to generate sufficient O_3 to produce an NO_2 concentration of approximately 80% of the URL of the NO_2 range.

2.1.4.6.4 Calculate the NO_2 concentration as follows:

$$[NO_2]=[NO]_{orig}-[NO]_{rem} \quad (3)$$

where:

$[NO_2]=NO_2$ concentration generated, parts per million

$[NO]_{orig}$=original NO concentration, parts per million

$[NO]_{rem}=NO$ concentration remaining after addition of O_3, parts per million

NOTE: If the NO_2 impurity in the NO cylinder is known, the NO_2 concentration may be corrected as follows:

$$[NO_2]=NO_{orig}-[NO]_{rem}+\frac{{}^cNO_2\times {}^rNO}{{}^rNO+{}^rO} \quad (4)$$

where:

${}^cNO_2=NO_2$ impurity concentration in the NO cylinder, parts per million

2.1.4.6.5 When the analyzer's response has stabilized, adjust the NO_2 span control as necessary to obtain a full scale response equal to the desired URL. If substantial adjustment of the span control is necessary, it may be necessary to recheck the zero and span adjustments by repeating the zero and span procedure. Record the analyzer response and NO_2 concentration.

2.1.4.6.6 Maintaining the same NO flow and air flow as in 2.1.4.6.3, adjust the ozone generator to obtain several other concentrations of NO_2 over the NO_2 range (at least five are suggested). Calculate the NO_2 concentrations using equation (3) or (4) and record the corresponding analyzer responses. Plot the analyzer response (y-axis) versus the calculated NO_2 concentrations (x-axis). Connect the points and extrapolate the curve back to intercept the x-axis. The x-intercept indicates the NO_2 impurity in the NO cylinder or the error if a correction was made for NO_2 impurity according to equation (4). The NO_2 impurity is calculated as follows:

$C_{NO_2}=x$=Intercept (parts per million NO_2)

$$\times\frac{F_{NO}+F_O}{F_{NO}} \quad (5$$

2.1.4.6.7 If the error due to the x-intercept being different from zero is excessive, according to applicable quality control or other criteria, the NO_2 calibration should be repeated using equation (4) to calculate the NO_2 concentrations. The final plot of analyzer response versus calculated NO_2 concentration is the NO_2 calibration curve.

NOTE: Detailed information on calibration and other procedures in this method can be found in reference 12.

2.2 Alternative B—NO_2 permeation device.

NOTE: Some NO_2 analyzers may require concurrent or prior calibration of associated NO and/or NO_x ranges; in such cases alternative A may be necessary or preferable to alternative B.

2.2.1 Principle. Atmospheres containing accurately known concentrations of nitrogen dioxide are generated by means of a permeation device.(9) The permeation device emits NO_2 at a known constant rate provided the temperature of the device is held constant (±0.1°C) and the device has been accurately calibrated at the temperature of use. The NO_2 emitted from the device is diluted with zero air to produce NO_2 concentrations suitable for calibration.

2.2.2 Apparatus. A system suitable for diluting the permeated NO_2 to the desired concentrations with zero air. Figure 2 shows a diagram of a typical system, using a small fixed air flow over the permeation device and subsequent dilution to the final concentration. Alternatively, the total air flow may be passed across the permeation device if the device is closely monitored to insure that no temperature variations occur as the flow rate is changed. The split-stream arrangement requires a mixing chamber, as shown. A valve may be used as shown in Figure 2 to divert the NO_2 from the permeation device to provide zero air at the manifold for zero adjustments. The permeation device should always have air flow across it to prevent large build-up of NO_2 in the system and a consequent restabilization period.

2.2.2.1 Air flow controllers. Devices capable of maintaining constant air flow within ±2%.

2.2.2.2 Air flowmeters. Properly calibrated flowmeters capable of measuring and monitoring air flows within ±2%.

2.2.2.3 Mixing chamber. A glass chamber of proper design to provide thorough mixing of pollutant gas stream and diluent air.

2.2.2.4 Drier. Scrubber to remove moisture from the permeation device air stream.

2.2.2.5 Output manifold. The output manifold should be constructed of glass or Teflon of sufficient diameter to insure a minimum pressure drop at the analyzer connection. The system must have a vent designed to insure atmosphere pressure at the manifold and to prevent ambient air from entering the manifold.

2.2.2.6 Constant temperature chamber. Chamber capable of housing the NO_2 permeation device and maintaining its temperature to within ±0.1°C.

2.2.2.7 Temperature measuring device. Device capable of measuring and monitoring the temperature of the NO_2 permeation device with an accuracy of ±0.05°C.

2.2.3 Reagents

2.2.3.1 Calibrated NO_2 permeation device. The permeation device must be a National Bureau of Standards NO_2 Standard Reference Material (SRM 1629). Information regarding the use of permeation devices is given in the NBS certificate of analysis that is issued with the device and by Scaringelli et. al[10] and Rook et. al.[11]

2.2.3.2 Zero air. Air, free of contaminants which might react with NO_2 or cause a detectable response on the NO_2 analyzer. The zero air passing across the permeation device must be very dry to avoid surface reactions on the device.

2.2.4 Procedure

2.2.4.1 Assemble the calibration apparatus such as the typical one shown in Figure 2. All materials in contact with the pollutant must be glass or Teflon and be completely clean.

2.2.4.2 Insure that the flow measuring device(s) are properly and accurately calibrated under the conditions of use against a reliable standard such as a soap-bubble meter or wet-test meter traceable to NBS. All volumetric flows should be corected to 25° C and 760 mm Hg.

2.2.4.3 Install the permeation device in the constant temperature chamber and allow it to stabilize at the calibration temperature as directed by NBS. The temperature should be controlled to within ±0.1 C° or better and monitored with the temperature measuring device.

2.2.4.4 Allow the NO_2 analyzer under calibration to sample zero air until a stable response is obtained. When the response has stabilized, make the proper zero adjustments.

2.2.4.5 Adjust the air flow to provide on NO_2 concentration of approximately 80% of the URL of the NO_2 range. The total air flow must exceed the demand of the analyzer(s) under calibration. The actual concentration of NO_2 is calculated as:

$$[NO_2]=\frac{P\times K}{F_T} \quad (6)$$

where:

$[NO_2]$ = NO_2 concentration, parts per million
P = permeation rate, microgram per minute
K = 0.532 μl NO_2/μg NO_2 (at 25°C and 760 mm Hg)
F = total air flow, liter per minute (corrected to 25°C and 760 mm Hg)

When the analyzer response has stabilized, adjust the NO_2 span control as necessary to obtain a full scale response equal to the desired URL. If substantial adjustment of the span control is necessary, it may be necessary to recheck the zero and span adjustments by repeating steps 2.2.4.4 and 2.2.4.5.

2.2.4.6 Adjust F_T to provide several other concentrations of NO_2 (at least five are suggested) over the analyzer's range, calculating the concentration using equation (6). Plot the analyzer response (y-axis) versus the NO_2 concentration (x-axis) and draw the NO_2 calibration curve.

NOTE: Additional information on calibration is provided in reference 12.

2.3 Frequency of calibration. The frequency of calibration, as well as the number of points necessary to establish the calibration curve and the frequency of other performance checks, will vary from one analyzer to another. The user's quality control program should provide guidelines for initial establishment of these variables and for subsequent alteration as operational experience is accumulated. Manufacturers of analyzers should include in their instruction/operation manuals information and guidance as to these variables and on other matters of operation, calibration, and quality control.

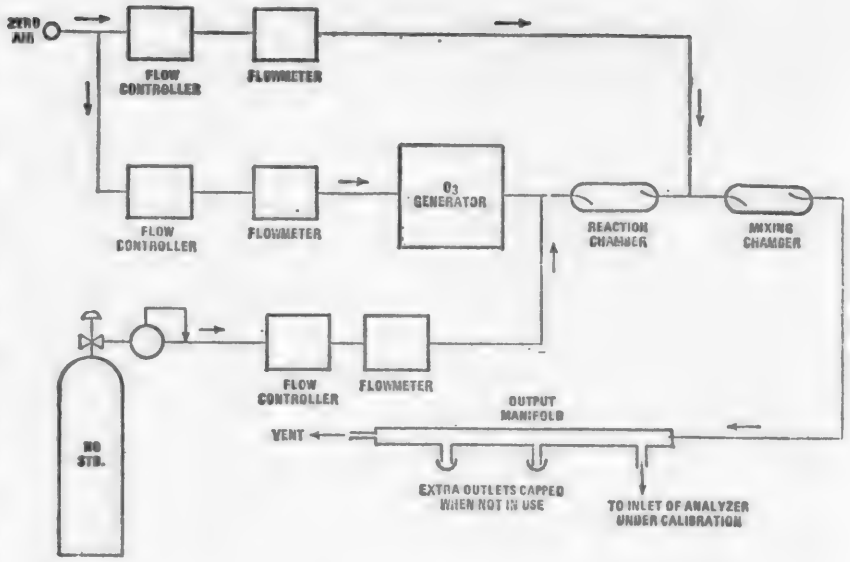

Figure 1. Schematic diagram of a typical GPT apparatus.

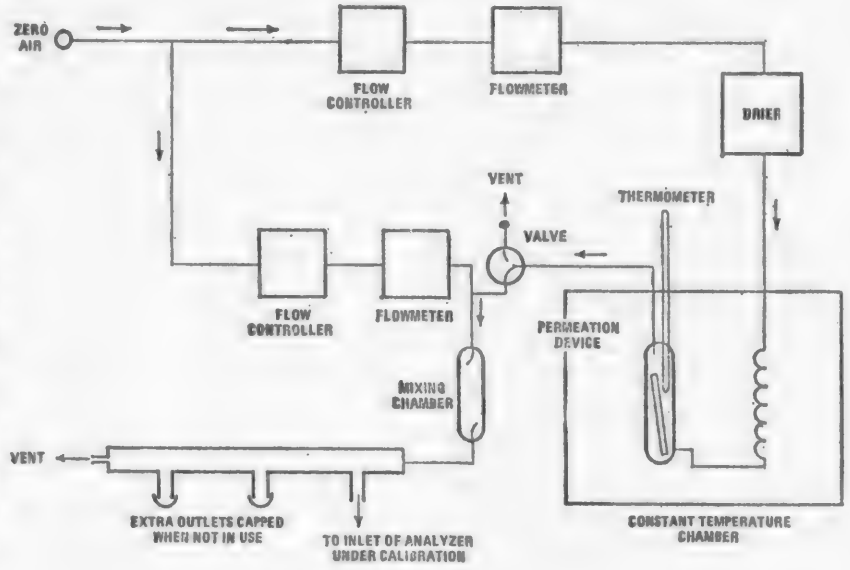

Figure 2. Schematic diagram of a typical calibration apparatus using an NO_2 permeation device.

2.4 Converter efficiency. Determination of the efficiency with which the converter converts NO_2 to NO is not a mandatory part of the analyzer calibration. However, calibration stability of the analyzer depends on the conversion efficiency being constant. Since a low converter efficiency is less likely to be constant, determination of converter efficiency may be useful as a quality control check or as an indicator of the need for analyzer performance checks. A procedure for determining converter efficiency is given in reference 12.

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(Sec. 4, Pub. L. 91–604, 84 Stat. 1678 (42 U.S.C. 1857c–4))

[FR Doc.76–7360 Filed 3–16–76;8:45 am]

[40 CFR Parts 51 and 53]

[FRL 495–3]

AMBIENT AIR MONITORING REFERENCE AND EQUIVALENT METHODS

Reference and Equivalent Methods for Nitrogen Dioxide

Notice is hereby given that the Environmental Protection Agency (EPA) is considering amendments to Parts 51 and 53 of Title 40, Code of Federal Regulations, as set forth below. The purpose of these amendments is to extend the scope of Parts 51 and 53 to provide for designation and use of reference and equivalent methods for the measurement of nitrogen dioxide (NO_2) in the atmosphere.

Elsewhere in this issue of the FEDERAL REGISTER, EPA is proposing to amend Appendix F of 40 CFR Part 50 to specify a new measurement principle and calibration procedure applicable to reference methods for the measurement of NO_2 in the atmosphere. As discussed more fully below, the proposed amendments to Part 53 would provide for designation of NO_2 reference methods based on the new measurement principle and calibration procedure and for designation of equivalent methods. The proposed amendments to Part 51 would require use of such reference and equivalent methods (with certain exceptions) for purposes of the State Air Quality Surveillance Systems required by 40 CFR 51.17(a).

BACKGROUND

On February 18, 1975 (40 FR 7044), EPA promulgated a new Part 53 of Title 40, Code of Federal Regulations, which established definitive requirements and procedures by which methods for sampling and analyzing the ambient air may be designated "reference methods" or "equivalent methods" for the measurement of specified air pollutants. Provisions for designation of reference and equivalent methods for NO_2 were specifically excluded from Part 53 because, at the time of promulgation, there were technical problems with the existing NO_2 reference method and replacement of that method was being considered. For similar reasons, use of reference or equivalent methods in the air quality surveillance systems required by 40 CFR 51.17 (a) was not required at that time (see 40 CFR 51.17a, promulgated on February 18, 1975 (40 FR 7042)).

In view of the new measurement principle and calibration procedure for NO_2 reference methods being proposed elsewhere in this issue of the FEDERAL REGISTER, provisions for designation of NO_2 reference and equivalent methods can now be proposed to extend the scope of Part 53. For similar reasons, EPA believes it is now appropriate to propose an amendment of 40 CFR 51.17a to require use of such methods (with certain exceptions, discussed below) for purposes of 40 CFR 51.17(a). The proposed amendments to Parts 51 and 53 may, of course, require revision as a result of any revisions of the proposed measurement principle and calibration procedure for NO_2 after consideration of comments received on any or all of these proposals.

DESIGNATION OF NO_2 REFERENCE AND EQUIVALENT METHODS

The proposed amendments to Part 53, set forth below, are relatively simple and straightforward. Table B–1 of Part 53 would be revised to add a new column for NO_2 giving specifications for each of the performance parameters. Table B–3 would be revised to add interferant concentration specifications for various types of NO_2 methods. Table C–1 would be revised to add new NO_2 specifications for concentration range, simultaneous measurements required, and maximum discrepancy. With one minor exception, there would be no changes to Subpart A of Part 53 or to the test procedures in Subparts B and C. Since the proposed revision to Appendix F of Part 50 (appearing elsewhere in this issue of the FEDERAL REGISTER) would specify only a measurement principle and calibration procedure, a reference method for NO_2 would be required to utilize the proposed measurement principle and calibration procedure meet all requirements of Subparts A and B, and be designated as a reference method in accordance with the procedural requirements of Part 53. An equivalent method for NO_2 would have to meet the specifications given in Subpart C (and Subpart B if an automated method) and be designated as an equivalent method in accordance with the procedural requirements of Part 53.

The proposed NO_2 specifications for the performance parameters in Table B–1 are comparable to the corresponding specifications for SO_2 and photochemical oxidant. The proposed NO_2 specifications for the consistent relationship tests of Subpart C are also similar to the corresponding specifications for SO_2 and photochemical oxidant. The slight differences in the concentration range requirements for the NO_2 Subpart C tests reflect differences in the level of the ambient air quality standard for NO_2 and in the nature of occurrence of NO_2. The somewhat tighter maximum discrepancy specifications being proposed for NO_2 in the medium and high concentration ranges are based on the relatively advanced development of present NO_2 measurement technology as substantiated by EPA laboratory tests on several widely used NO_2 measurement methods. It should be noted that no 1-hour consistent relationship measurements are being proposed, even though the measurement principle and calibration procedure proposed elsewhere in this issue of the FEDERAL REGISTER would permit such 1-hour measurements. The reasons for this are twofold: (1) The ambient air quality standard for NO_2 is specified in terms of an annual arithmetic mean—thus 24-hour measurements would suffice for compliance determinations; and (2) a reqirement for 1-hour measurements would preclude the designation as equivalent methods of manual 24-hour integrated methods which provide substantial economic advantages over the use of automated (continuous) methods.

USE OF EXISTING METHODS

When Part 53 was promulgated on February 18, 1975 (40 FR 7044), an associated amendment to 40 CFR Part 51 (40 FR 7042) required that any method for SO_2, CO, or photochemical oxidant used for purposes of § 51.17(a) be a reference or equivalent method as defined in Part 53. The amendment also provided specific periods of time after promulgation to allow for replacement of existing methods with designated methods. These periods were 5 years for automated methods and 6 months for manual methods. During these interim periods, use of existing methods is permitted.

A similar amendment to Part 51, set forth below, would likewise require that any method for NO_2 used for purposes of § 51.17(a) be a reference or equivalent method as defined in Part 53. The new amendment would also provide specific periods of time for replacement of existing methods for NO_2. However, use of the existing reference method (promulgated on April 30, 1971 (36 FR 8186)), would not be permitted after promulgation of this amendment because of the serious technical problems with the

method. This should present no significant problem to State and local control agencies because most if not all of these agencies replaced the existing reference method with the arsenite method shortly after the June 8, 1973, notice announcing EPA's intention to replace the existing reference method (38 FR 15174). The specific periods of time allowed for replacement of existing methods would be 3 years for automated NO_2 methods and 1 year for manual NO_2 methods. With the exception of the existing reference method, use of existing methods for NO_2 would be permitted during these interim periods. In addition, use of existing automated methods for the remainder of their useful lives may be possible in some cases under amendments to 40 CFR 51.17a promulgated elsewhere in this issue of the FEDERAL REGISTER.

The 1 year interim period being proposed for replacement of manual NO_2 methods will allow for testing and designation of 1 or more equivalent manual methods, as discussed in the preamble accompanying the proposed amendments to Part 50 elsewhere in this issue of the FEDERAL REGISTER. The 3 year interim period being proposed for replacement of automated NO_2 methods, as opposed to the 5 year period for SO, CO, and oxidant methods, is justified because far fewer automated NO_2 methods are in use among State and local agencies, thus mitigating the economic impact of the new requirements.

Interested persons may submit written comments on these proposed amendments in triplicate to the Director, Environmental Monitoring and Support Laboratory, Department E (MD-75), United States Environmental Protection Agency, Research Triangle Park, North Carolina, 27711. All comments postmarked on or before May 3, 1976 will be considered. All comments will be available for public inspection during normal business hours at the address specified above and at the United States Environmental Protection Agency, Public Information Reference Unit, Room 2922 (EPA Library), 401 M Street, SW., Washington, D.C. 20460. The amendments, modified as the Administrator deems appropriate after consideration of comments will become effective approximately 30 days after promulgation.

(Secs. 110(a) and 301(a) of the Clean Air Act (42 U.S.C. 1857c-5(a), 1857g(a)), as amended by sections 4(a) and 15(c)(2) of Public Law 91-604, 84 Stat. 1678, 1713.)

Dated: March 3, 1976.

RUSSELL E. TRAIN,
Administrator.

It is proposed to amend Chapter I, Title 40, Code of Federal Regulations, as follows:

PART 51—REQUIREMENTS FOR PREPARATION, ADOPTION, AND SUBMITTAL OF IMPLEMENTATION PLANS

1. In Section 51.17, the table in paragraph (a)(1) is amended by revising the entry for Nitrogen Dioxide under the heading "Measurement method or principle" to read as follows: "Gas phase chemiluminescence or equivalent."

2. Section 51.17a is amended by revising paragraph (a) to read as follows:

§ 51.17a Air quality monitoring methods.

(a) *General requirements.* (1) Except as otherwise provided in this paragraph (a), each method for measuring SO_2, CO, photochemical oxidant, or NO_2 used for purposes of § 51.17(a) shall be a reference method or equivalent method as defined in § 53.1 of this chapter. Concentrations of particulate matter shall be measured by the reference method specified in Appendix B to Part 50 of this chapter and by the tape sampler method.

(NOTE: Part 53 of this chapter does not presently provide for reference or equivalent method determinations with respect to methods of measuring hydrocarbons corrected for methane or suspended particulates. Guidance for the selection of automated methods for measuring hydrocarbons may be found in the EPA Environmental Monitoring Series document (EPA-650/4-74-018), *Guidelines for Determining Performance Characteristics of Automated Methods for Measuring Nitrogen Dioxide and Hydrocarbons Corrected for Methane in Ambient Air,* which may be obtained from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia, 22151. For SO_2, CO, photochemical oxidant, and NO_2, a list of methods designated as reference or equivalent methods under Part 53 may be obtained as provided in § 53.8 of this chapter.)

(2) Any analyzer for SO_2, CO, or photochemical oxidant purchased before February 18, 1976, may be used for purposes of § 51.17(a) up to and including February 18, 1980. Any analyzer for NO_2 purchased prior to 1 year after [date of promulgation of these amendments] may be used for purposes of § 51.17(a) for a period not to exceed three years after [date of promulgation of these amendments.]

(3) Any manual method for SO_2, CO, or photochemical oxidant in use before February 18, 1975, may be used for purposes of § 51.17(a) up to and including August 18, 1975. Any manual method for NO_2, other than the method specified in Appendix F to Part 50 of this chapter prior to [date of promulgation of these amendments], in use before [date of promulgation of these amendments] may be used for purposes of § 51.17(a) for a period not to exceed 1 year after [date of promulgation of these amendments]. (Secs. 4(a) and 15(c)(2), Pub. L. 91-604, 84 Stat. 1678, 1713 [42 U.S.C. 1857c-5, 1857g(a)])

PART 53—AMBIENT AIR MONITORING REFERENCE AND EQUIVALENT METHODS

3. In § 53.20, Table B-1 is revised to read as follows:

53.20 General provisions.

* * * * *

TABLE B-1.—*Performance specifications for automated methods*

Performance parameter	Units[1]	Sulfur dioxide	Photochemical oxidants	Carbon monoxide	Nitrogen dioxide	Definitions and test procedures
1. Range	Parts per million.	0-0.5	0-0.5	0-50	0-0.5	Sec. 53.23(a).
2. Noise	do	.005	.005	.50	.005	Sec. 53.23(b).
3. Lower detectable limit	do	.01	.01	1.0	.01	Sec. 53.23(c).
4. Interference equivalent						Sec. 53.23(d).
Each interferant	do	±.02	±.02	±1.0	±0.2	
Total interferant	do	.06	.06	1.5	.04	
5. Zero drift, 12 and 24 hour	do	±.02	±.02	±1.0	±.02	Sec. 52.23(e).
6. Span drift, 24 hour						Do.
20 percent of upper rante limit	Percent	±20.0	±20.0	±10.0	±20.0	
80 percent of upper range limit	do	±5.0	±5.0	±2.5	±5.0	
7. Lag time	Minutes	20	20	10	20	Do.
8. Rise time	do	15	15	5	15	Do.
9. Fall time	do	15	15	5	15	Do.
10. Precision						Do.
20 percent of upper range limit	Parts per million.	.01	.01	.5	.02	
80 percent of upper range limit	do	.015	.01	.5	.03	

[1] To convert from parts per million to $\mu g/m^3$ at 25°C and 760 mm Hg, multiply by $M/0.02447$, where M is the molecular weight of the gas.

* * * * * *

4. In § 53.23, Table B–3, is revised to read as follows:

§ 53.23 Test procedures.

* * * * * *

TABLE B–3.—*Interferant test concentration,[1] parts per million*

Pollutant	Analyzer type [2]	Hydrochloric acid	Ammonia	Hydrogen sulfide	Sulfur dioxide	Nitrogen dioxide	Nitric oxide	Carbon dioxide	Ethylene	Ozone	M-Xylene	Water vapor	Carbon monoxide	Methane	Ethane
SO_2	Flame photometric (FPD).			0.1	[4] 0.14			750				[3] 20,000	50		
SO_2	Gas chromatography-(FPD).			.1	[4] .14			750				[3] 20,000	50		
SO_2	Spectrophotometric-wet chemical (pararosaniline reaction).	0.2	[3] 0.1	.1	[4] .14	0.5		750		0.5					
SO_2	Electrochemical	.2	[3] .1	.1	[4] .14	.5	0.5		0.2	.5		[3] 20,000			
SO_2	Conductivity	.2	[3] .1		[4] .14	.5		750							
SO_2	Spectrophotometric-gas phase.				[4] .14	.5	.5			.5	0.2				
O_3	Chemiluminescent			[3] .1				750		[4] .08		[3] 20,000			
O_3	Electrochemical		[3] .1		.5	.5				[4] .08		[3] 20,000			
O_3	Spectrophotometric-wet chemical (potassium iodide reaction).		[3] .1		.5	.5	[3] .5			[4] .08					
O_3	Spectrophotometric-gas phase.				.5	.5	[3] .5			[4] .08					
CO	Infrared							750				20,000	[4] 10		
CO	Gas chromatography with flame ionization detector.											20,000	[4] 10		0.5
CO	Electrochemical						.5		.2			20,000	[4] 10		
CO	Catalytic combustion-thermal detection.		.1					750	.2			20,000	[4] 10	5.0	.5
CO	IR fluorescence							750				20,000	[4] 10		.5
CO	Mercury replacement-UV photometric.								.2				[4] 10		.5
NO_2	Chemiluminescent		[3] .1		.5	[4] .1	.5					20,000			
NO_2	Spectrophotometric-wet chemical (azo-dye reaction).				.5	[4] .1	.5			.5					
NO_2	Electrochemical		[3] .1		.5	[4] .1	.5			.5		20,000	50		
NO_2	Spectrophotometric-gas phase		[3] .1		.5	[4] .1	.5			.5		20,000	50		

[1] Concentrations of interferant listed must be prepared and controlled to ±10 percent of the state value.
[2] Analyzer types not listed will be considered by the administrator as special cases.
[3] Do not mix with pollutant.
[4] Concentration of pollutant used for test. These pollutant concentrations must be prepared to ±10 percent of the stated value.

* * * * * * *

5. In § 53.32, the first sentence of paragraph (f) is revised to read as follows:

§ 53.32 Test procedures.

* * * * * * *

(f) For oxidant, carbon monoxide and nitrogen dioxide, no more than six (6) 1-hour measurements shall be made per day. * * *

* * * * * * *

6. In § 53.32, Table C–1 is revised to read as follows:

§ 53.32 Test procedures.

* * * * * * *

TABLE C–1.—*Test concentration ranges, number of measurements required, and maximum discrepancy specification*

Pollutant	Concentration range, parts per million	Simultaneous measurements required				Maximum discrepancy specification, parts per million
		1-hr		24-hr		
		First set	Second set	First set	Second set	
Oxidants	Low 0.06 to 0.10	5	6			0.02
	Med 0.15 to 0.25	5	6			.03
	High 0.35 to 0.45	4	6			.04
Total		14	18			
Carbon monoxide.	Low 7 to 11	5	6			1.5
	Med 20 to 30	5	6			2.0
	High 35 to 45	4	6			3.0
Total		14	18			
Sulfur dioxide	Low 0.02 to 0.05			3	3	0.02
	Med 0.10 to 0.15			2	3	.03
	High 0.30 to 0.50	7	8	2	2	.04
Total		7	8	7	8	
Nitrogen dioxide.	Low 0.02 to 0.08			3	3	0.02
	Med 0.10 to 0.20			2	3	.02
	High 0.25 to 0.35			2	2	.03
Total				7	8	

(Sec. 15(c)(2), Pub. L. 91–604, 84 Stat. 1713 [42 U.S.C. 1857 g(a)])

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